

STATEMENT OF BASIS

Nichols Aluminum Alabama, Inc.
Decatur, AL
Morgan County
705-0007

This proposed Title V Major Source Operating Permit renewal is issued under the provisions of ADEM Admin. Code r. 335-3-16. The above name applicant has requested authorization to perform the work or operate the facility shown on the application and drawing, plans, and other documents attached herto or on file with the Air Division of the Alabama Department of Environmental Management, in accordance with the terms and conditions of this permit.

Nichols Aluminum Alabama (NAA), located in Decatur, Alabama is a manufacturing facility that produces aluminum sheets.

The following are significant sources of air pollution for this facility:

- Cold Coil Rolling Mill w/ Mist Eliminator
- Annealing Oven #1 and #2
- Annealing Oven #3
- Aluminum Coil Coating Operation with Regenerative Thermal Oxidizer

Cold Coil Rolling Mill w/ Mist Eliminator

Process Description:

Aluminum coils are rolled to achieve desired thickness. Coils are loaded onto a mandrel and the sheet is fed through hydraulic rolling heads that apply pressure to the coil. The rolling heads are adjusted to apply necessary pressure to attain desired thickness. Also, as the aluminum sheet passes through the rolling heads, a mineral seal oil and additive mixture is applied to the sheet, which lubricates the metal and removes heat from the process. After passing through the roller, a cleaner is applied to the aluminum to remove oily film.

Additional processing may include edge trimming, leveling, tensioning, and/or cleaning with a heated solution depending on the desired specifications. Process coils are then staged for coating or shipment offsite.

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code r. 335-3-16-.03, “*Major Source Operating Permits*”.
- This source is subject to ADEM Admin. Code r. 335-3-4-.04(1), “Control of Particulate Emissions for Process Industries – General”.
- This unit is subject to ADEM Admin. Code r. 335-3-4-.01(1), “Control of Particulate Emissions – Visible Emissions”.
- This furnace is subject to 40 CFR 64, Compliance Assurance Monitoring. Pre-control potential particulate matter emissions exceed 100 TPY.

Emissions Standards:

- Opacity
 - ADEM Admin Code r. 335-4-.01(1)(a)(b), states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) percent opacity, as determined by a six (6) minute average. During one six (6) minute period a person may discharge into the atmosphere from any source of emission forty (40%) percent opacity,
- ADEM Admin Code r. 335-3-4-.04(1) states no person shall cause or permit the emission of particulate matter in excess of the amount for the process weight per hour allocated to such source accomplished by use of the equation:

$$E = 3.59 (P)^{0.62} \text{ (P less than 30 tons per hour)}$$

$$E = 17.31 (P)^{0.16} \text{ (P greater than 30 tons per hour)}$$

Where E = Emissions in pounds per hour

P = Process weight per hour in tons per hour

The PM allowable for this unit at maximum capacity would be 32.4 lb/hr.

Expected Emissions:

The maximum expected emissions are as follows:

Pollutant	Expected Emissions (lb/hr)	Expected Emissions (TPY)
PM	12.2*	53.3*
VOC	112	511

Expected emissions are based on an emission test performed on this unit and operating 8,760 hours.

*The PM allowable for this unit at maximum capacity would be 32.4 lb/hr.

Compliance and Performance Test Methods and Procedures:

- If testing is required, particulate matter(PM) emissions shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. (*ADEM Admin.Code r. 335-3-1-.05*)
- Method 9 of 40 CFR 60, Appendix A, or an equivalent method approved by the Department shall be used in the determination of the opacity of the stack emissions. (*ADEM Admin.Code r. 335-3-1-.05*)
- If testing is required, VOC emissions shall be determined in accordance with Method 25a of 40 CFR 60, Appendix A. (ADEM Admin Code r. 335-1-.05)

Emission Monitoring:

This unit is subject to the applicable emission monitoring requirements of ADEM Admin. Code r. 335-3-16-.05.

- ADEM Admin. Code r. 335-3-16-.05:
 - The facility shall perform a daily inspection of the demister to verify proper operation. The following activities shall be performed:
 1. Once per day perform a visual check of the demister shall be performed by a person familiar with Method 9.
 2. If visible emissions in excess of 15% opacity are noted then a Method 9 must be performed within 24 hours of the observations.
 3. Once per day check the cold mill hoods for fugitive emissions.
 4. Once per day record the pressure drop across the demister.

5. If the pressure drop is outside the normal pressure differential range of 2 inches w.c. to 8 inches w.c. and is not correctable within a period of 1 hour then an inspection of the demister will be conducted and items (1) thru (4) will be performed.
 6. Record any repairs or observed problems.
- The facility shall perform a quarterly (every three months) inspection of the demister to verify proper operation. The following activities shall be performed:
 1. Once quarterly check fan and demister pads for proper operation.
 2. Once quarterly clean demister pads and system to insure proper operation.
 3. Once quarterly a visual check of all hoods and ductwork.
 4. Record any repairs or observed problems.
 5. If between quarterly inspections; a visible sheen of oil appears on the alley pavement or visible emissions exceed 15%, an inspection of the demister will be conducted and items (1) thru (4) will be performed.

CAM Analysis:

Particulate Matter

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of this section;
- This unit has a limit on PM emissions of 32.4 (lb/hr) pounds per hour.

- This unit uses a control device (mist eliminator) to achieve compliance with the PM limitation.
 - The mist eliminator reduces PM emissions with a removal efficiency of 90%.
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, “potential pre-control device emissions” shall have the same meaning as “potential to emit,” as defined in §64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

Based on an emission test performed, the **cold coil rolling mill has the pre-controlled potential to emit particulate matter equal to or greater than 100 percent of the amount required to be classified as a major source.**

- Since the allowable emissions standard of 32.4 lbs/hr required by ADEM Admin Code r. 335-3-4-.04(1) exceeds 100 TPY for this unit, the following PM emissions limit would ensure that the potential to emit, including the effect of control devices, is less than 100 TPY. The limit would prevent the facility from being required to collect four or more data values as required in §64.3(b)(4)(i).

Emission Point	Allowable Emissions (lb/hr)	Allowable Emissions (TPY)
E1	22.7	99.4

- PM emissions from emission point E1 shall not exceed the lesser of that which is calculated using the process weight equation, as defined in ADEM Admin. Code r. 335-3-4-.04(1), or the requested PM limit as stated above.

Monitoring

- The facility proposes the following monitoring to satisfy the requirements of CAM:

MONITORING APPROACH: Cold Mill (Rolling) Operation

	Indicator 1	Indicator 2
I. Indicator	Cold Mill Hoods	Mist Elimination System
Measurement Approach	Visible Emissions	Visible emissions in excess of 15 %
II. Indicator Range	Excursions are defined as any instance where the opacity exceeds 15%.	The facility shall report any Method 9's with an average opacity over 15%.
QIP Threshold	Record daily pressure drop across the mist eliminator	Pressure drop outside normal pressure drop range of 2 in w.c to 8 in w.c and not corrected within one-hour. An excursion triggers an investigation into the cause and the appropriate corrective action will be performed and documented.
III. Performance Criteria		
Data Representativeness	Pressure drop across the mist eliminator.	Duct static pressure monitored in the duct upstream of the mist eliminator.
Verification of Operation Status	The monitoring equipment will be inspected for visible emissions daily and recorded whether operation or not	The monitoring equipment will be inspected for visible emissions daily and recorded whether operation or not
QA/QC Practices and Criteria	The pressure drop is inspected and recorded daily	The pressure drop is inspected and filter cleaned quarterly
Monitoring Frequency	Daily inspection of the hoods and pressure drop	Quarterly clean mist eliminator filters, check fan, visual check of hoods and ductwork.
Data Collection Procedures	The observation will be documented by the observer	The observation will be documented by the observer
Averaging Period	Daily, quarterly	Daily, quarterly

Justification

Rationale for Selection of Performance Indicators

Visible emissions were selected as a performance indicator because it is indicative of good operation and maintenance of the demister. When the equipment is properly operating, visible emissions will maintain a consistently normal appearance. If visible emissions from the demister should have an opacity greater than 15%, there is a likelihood that the mist elimination system may have entered into an upset condition that must be investigated to determine the cause of the abnormal emissions. The most likely causes of increased visible emissions from the demister are a malfunction, broken ductwork, or demister pads.

In general, the demister will operate within a prescribed range of pressure drops based on the airflow being delivered to the equipment. If the pressure drop readings change dramatically or fall outside of the specified range, an investigation must be performed to determine the cause of the change in readings and remedial actions performed, if required. The most likely causes of a change in pressure drop are broken demister pads.

Rationale for Selection of Indicator Ranges

The selected indicator for visible emissions is a change from normal appearance. The observer will be trained to recognize normal emissions from the exhaust so that in the event there is a change in appearance of the exhaust plume; an investigation into its cause can be initiated. If visible emissions are greater than 15%, it will be documented as an excursion. When an abnormal condition exists, maintenance will be notified of the excursion, and will instigate an investigation to determine the cause of the visible emission. Once determined, the cause of the excursion will be documented and any

necessary maintenance activities required to correct the visible emissions will be scheduled and performed at a time such that the impact to operations are minimized while insuring that no emissions limits are violated. All results of the investigation and any maintenance activity associated with the correction will be documented. No formal report will be required unless it is determined that an emission limit has been exceeded.

The selected indicator for the demister unit is a pressure drop less than 2 inches w.c. or greater than 8 inches w.c. Whenever the pressure drop is above or below the range of 2 to 8 inches w.c. an investigation into its cause will be initiated. If the pressure drop reading has fallen outside of the range, maintenance staff will be notified of the excursion, and will instigate an investigation to determine the cause of the unusual reading. Once determined, the cause of the excursion will be documented and any necessary maintenance activities required to correct the unusual pressure drop will be scheduled and performed. The activities will occur at a time such that the impacts to operations are minimized, while insuring that no emissions limits are violated. All results of the investigation and any maintenance activity associated with the correction will be documented. No formal report will be required unless it is determined that an emission limitation has been exceeded.

Recordkeeping and Reporting Requirements:

- The Permittee shall maintain a record of all inspections performed to satisfy the requirements of periodic monitoring. This shall include all problems observed and corrective actions taken. Each record shall be maintained for a period of 5 years. (*ADEM Admin. Code r. 335-3-16-.05(c)(2)*).

- This source is subject to the applicable requirements of 40 CFR Part 64, "Compliance Assurance Monitoring" to include the Reporting and Recordkeeping Requirements in §64.9 (40 CFR Part 64 – CAM).

- The Permittee shall record the demister pressure drop daily. Any deviations from the pressure range shall be documented along with the corrective action and reported to the Department within two (2) working days. Each record shall be maintained for a period of 5 years.

Annealing Oven #1 and #2

The annealing ovens heat treats cast aluminum prior to the cleaning and leveling process. The annealer utilizes a carbon monoxide, carbon dioxide inter gas atmosphere during the heat treatment process. The aluminum coils are placed in the oven for approximately five to six hours at a temperature of 700 °F.

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code r. 335-3-16-.03, “*Major Source Operating Permits*”.

Emissions Standards:

N/A

Expected Emissions

The maximum expected emissions are as follows:

Pollutant	Expected Emissions (lb/hr)	Expected Emissions (TPY)
PM	.14	.61
SO ₂	.01	.04
NO _x	1.8	7.9
CO	1.5	6.7
VOC	1.9	8.3

PM, SO₂, NO_x, VOC, and CO emissions were based on AP-42 emissions factors and operating 8,760 hours.

Compliance and Performance Test Methods and Procedures:

N/A

Emission Monitoring:

N/A

Recordkeeping and Reporting Requirements:

N/A

Annealing Oven #3

The annealing oven heat treats cast aluminum prior to the cleaning and leveling process. The annealer utilizes a carbon monoxide, carbon dioxide inter gas atmosphere during the heat treatment process. The aluminum coils are placed in the oven for approximately five to six hours at a temperature of 700 °F.

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code r. 335-3-16-.03, “*Major Source Operating Permits*”.

Emissions Standards:

N/A

Expected Emissions

The maximum expected emissions are as follows:

Pollutant	Expected Emissions (lb/hr)	Expected Emissions (TPY)
PM	.07	.3
SO₂	.005	.02
NO_x	.9	4.0
CO	.77	3.3
VOC	.94	4.1

PM, SO₂, NO_x, VOC, and CO emissions were based on AP-42 emissions factors and operating 8,760 hours.

Compliance and Performance Test Methods and Procedures:

N/A

Emission Monitoring:

N/A

Recordkeeping and Reporting Requirements:

N/A

Aluminum Coil Coating Operation (250 FPM) with Regenerative Thermal Oxidizer

Process Description:

The aluminum coil rolls are unwound, cleaned, and then coated by a roller application system. The coated coils pass through a gas fired oven for curing. The facility's coil coating system includes both a prime and finish coating application station, each equipped with dedicated curing oven.

NAA installed a 35,000-scfm regenerative thermal oxidizer (RTO) to reduce previously uncontrolled VOC emissions from the coating operation. The prime and finish curing oven emissions previously emitted directly to the atmosphere through a series of oven zone exhaust stacks are routed to the RTO through new ductwork. NAA also installed close-capture hoods at the prime and finish coating stations that vent to the RTO and reduce fugitive VOC emission at the coating stations.

Applicability:

- This source is subject to the applicable requirements of ADEM Admin. Code r. 335-3-16-.03, "*Major Source Operating Permits*".
- This source is subject to ADEM Admin. Code r. 335-3-4-.04(1), "Control of Particulate Emissions for Process Industries – General".
- This unit is subject to ADEM Admin. Code r. 335-3-4-.01(1), "Control of Particulate Emissions – Visible Emissions".

- This unit has an enforceable limit in order to prevent them from being subject to the provisions of ADEM Admin. Code r. 335-3-14-.04, “Air Permits Authorizing Construction in Clean Air Areas [Prevention of Significant Deterioration].”
- This unit is subject to 40 CFR 64, Compliance Assurance Monitoring. Pre-control potential volatile organic compound emissions exceed 100 TPY.

Emissions Standards:

- Opacity
 - ADEM Admin Code r. 335-4-.01(1)(a)(b), states no person shall discharge particulate emissions of an opacity greater than that designated as twenty (20%) percent opacity, as determined by a six (6) minute average. During one six (6) minute period a person may discharge into the atmosphere from any source of emission forty (40%) percent opacity.
- ADEM Admin Code r. 335-3-4-.04(1) states no person shall cause or permit the emission of particulate matter in excess of the amount for the process weight per hour allocated to such source accomplished by use of the equation:

$$E = 3.59 (P)^{0.62} \text{ (P less than 30 tons per hour)}$$

$$E = 17.31 (P)^{0.16} \text{ (P greater than 30 tons per hour)}$$

Where E = Emissions in pounds per hour

P = Process weight per hour in tons per hour

- Volatile Organic Compound
VOC emissions from this unit shall not exceed the Anti-PSD limit of 39.9 TPY in any consecutive 12-month period.

- Hazardous Air Pollutants

Emissions from this facility shall not exceed 9.0 tons of any individual HAP and 24.0 tons of any combination of HAPs in any consecutive 12-month rolling period.

40 CFR 63 (MACT avoidance 40 CFR 63 Subpart SSSS)

Expected Emissions:

The maximum expected emissions are as follows:

Pollutant	Expected Emissions (lb/hr)	Expected Emissions (TPY)
PM	.25	1.08
SO₂	.02	.09
NO_x	3.25	14.3
CO	2.73	11.98
VOC	.916	3.82
HAP	5.67	24.9

PM, SO₂, NO_x, VOC, and CO emissions were based on AP-42 emissions factors and operating 8,760 hours. HAP emissions were calculated using engineering calculation operating 8,760 hrs.

Compliance and Performance Test Methods and Procedures:

- If testing is required, particulate matter(PM) emissions shall be determined in accordance with Method 5 of 40 CFR 60, Appendix A. (*ADEM Admin.Code r. 335-3-1-.05*)
- Method 9 of 40 CFR 60, Appendix A, or an equivalent method approved by the Department shall be used in the determination of the opacity of the stack emissions. (*ADEM Admin.Code r. 335-3-1-.05*)
- If testing is required, VOC emissions shall be determined in accordance with Method 25a of 40 CFR 60, Appendix A. (ADEM Admin Code r. 335-1-.05)

Emission Monitoring:

- The thermal oxidizer must have an audible alarm or easily detectable signal which will provide a warning when the combustion chamber 3-hour average temperature decreases to less than the established minimum operational temperature. The origin and detectability of the audible or other signal shall be such that it can be readily heard or detected by the operator or another person who will immediately determine the cause and take appropriate action to correct any problem and/or record the malfunction/reason. (*ADEM Admin. Code R. Rule 335-3-16-.05*)

CAM Analysis:

VOC

- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of this section;
- This unit has an anti-psd limit on VOC emissions of 9.1 (lb/hr) pounds per hour.
- This unit uses a control device (regenerative thermal oxidizer) to achieve compliance with the VOC limitation.
 - The mist eliminator reduces PM emissions with a destruction efficiency of 98%.
- The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, “potential pre-control device emissions” shall have the same meaning as “potential to emit,” as defined in §64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

Emissions:

Emission Point	Pollutant	Allowable Emissions		Pre-Control Potential Emissions		Controlled Potential Emissions	
		(lb/hr)	(TPY)	(lb/hr)	(TPY)	(lb/hr)	(TPY)
E-5	VOC	9.1	39.9	45.8	191	.916	3.82

- VOC emissions from emission point E5 shall not exceed the anit-psd limit of 9.1 lb/hr.

Monitoring

- The facility proposes the following monitoring to satisfy the requirements of CAM:

MONITORING APPROACH: Aluminum Coil Coating Operation with Regenerative Thermal Oxidizer

	Indicator 1	Indicator 2
I. Indicator	Combustion Chamber Temperature	Duct Static Pressure
Measurement Approach	Thermocouple located in the combustion chamber of the RTO.	Pressure transducer located in cumulative capture system duct.
II. Indicator Range	Excursions are defined as any instance where the 3-hour average of combustion chamber temperature falls below 1500°F. If an excursion occurs, the coater heads will be pulled and the coater heads will not re-engage until corrective action and reporting are performed.	An excursion is defined as any instance where the 3-hour average duct static pressure measured before the booster blower fan falls below negative 4 in. H ₂ O or when the fixed position of the dampers on hoods A, B, C, or D is less 50% open. Excursions trigger an inspection, corrective action, and reporting requirements.
III. Performance Criteria		
Data Representativeness	Temperature measured by a thermocouple located inside the combustion chamber of the RTO.	Duct static pressure monitored by a pressure transducer located in the duct upstream of the booster blower control damper.
Verification of Operation Status	The monitoring equipment will be operated and maintained per the manufacture's requirements or recommendations for installation, calibration, and	The monitoring equipment will be operated and maintained per the manufacture's requirements or recommendations for installation, calibration, and

QA/QC Practices and Criteria	start-up operation.	start-up operation.
	The thermocouple will be inspected and calibrated quarterly.	The pressure transducer will be inspected and calibrated annually.
Monitoring Frequency	Temperature is continuously monitored.	Pressure is continuously monitored.
Data Collection Procedures	Monitoring data is collected stored within the IHistorian program.	Monitoring data is collected stored within the IHistorian program.
Averaging Period	The 3-hour average will be based on 3-hours of coating line run time (production down-time will be excluded from the average).	The 3-hour average will be based on 3-hours of coating line run time (production down-time will be excluded from the average).

Justification

Rationale for Selection of Performance Indicators

A minimum combustion chamber temperature ensures an acceptable level of destruction efficiency is achieved for organic compounds exhausted to the RTO. In advance of the control device performance test, the minimum combustion chamber temperature is being set per the manufactures recommendations and performance guarantee.

The duct static pressure immediately upstream of control dampers for the RTO booster blower will be monitored to assure the line is maintaining acceptable capture efficiency. All of the flow pulled from the coater hoods and curing oven zones is directed through this blower, thus maintaining a sufficient flow will ensure that the capture system operates properly. In addition to the duct static pressure, damper positions for the coating hood close capture system will also be monitored to ensure that the hoods are operating as designed in accordance with an engineering evaluation of the side-draft hoods using ACGIH manual for industrial ventilation design.

Rationale for Selection of Indicator Range

The RTO will be operated with a minimum combustion chamber temperature of 1,500 °F. According to manufacturer's specifications, recommendations, and performance guarantee, this minimum temperature will be maintained on a 3-hour rolling average frequency.

The capture efficiency will be monitored by maintaining a minimum duct static pressure just upstream of the RTO booster blower control dampers and by fixing the close-capture hood damper positions. Per the manufacturer's specifications, the duct static pressure upstream of the booster blower control damper will be maintained at a negative pressure of 4 in w.g. or more. Damper positioning for the hoods A, B, and C in the finish coater room and hood D in the prime coater room will be fixed at 50% open or greater. These parameters should provide a minimum capture efficiency of 95%. This efficiency is based on an assumed 10% evaporation rate at the coating applicators and that the coater hoods and oven entrance tunnel will capture at least half of this fugitive emission loss within the coater rooms.

Recordkeeping and Reporting Requirements:

- The facility shall maintain a record of the 3-hour average combustion chamber temperature to satisfy the requirements of monitoring. This shall include all problems observed, excursions, and corrective actions taken. Each record shall be maintained for a period of 5 years. (*Adem Admin Code r. 335-3-16-.05*)
- The facility shall maintain a record of the 3-hour average of duct static pressure and damper positioning to satisfy the requirements of monitoring. This shall include all problems observed, excursions, and corrective actions taken. Each record shall be maintained for a period of 5 years. (*40 CFR 64*)

- The facility shall maintain a record of all calibrations of the thermocouples. This shall include all problems observed, excursions, and corrective actions taken. Each record shall be maintained for a period of 5 years. (*40 CFR 64*)
- The facility shall maintain a record of all calibrations of the pressure transducer. This shall include all problems observed, excursions, and corrective actions taken. Each record shall be maintained for a period of 5 years. (*40 CFR 64*)
- Records of the rolling 12-month total VOC emissions shall be kept in a form suitable for inspection and maintained for a period of 5 years. These records shall contain the following information (*Adem Admin Code r. 335-3-16-.05*):
 - The type, quantity in gallons, and weight in pounds, of each VOC containing materials used each calendar month.
 - The VOC content by weight (in pounds per gallon) of each VOC containing materials used shall be determined using EPA Test Method 24, as defined in 40 CFR 60, Appendix A, or equivalent vendor data.
 - The percent by weight of VOCs of each material used each calendar month.
 - The amount of VOCs emitted each calendar month expressed in the unit of pounds and tons.
 - The rolling 12-month total of VOCs emitted in the units of pounds and tons.

- The time, duration, cause(s), and the action(s) taken for any thermal oxidizer temperature less than the established minimum shall be recorded in a form suitable for inspection. These records shall be maintained for at least two years. For periods when the 3-hour average temperature is below the minimum operating temperature, VOCs and HAPs will be calculated as if there was no (0%) capture and destruction of VOCs and HAPs in the thermal oxidizer. (*Adem Admin Code r. 335-3-16-.05*)
- Records will be maintained of any malfunction of the thermal oxidizer, which results in an increase in the VOC and HAP emissions from any or all process equipment. These records will be maintained in a form suitable for inspection for a period of two years. (*Adem Admin Code r. 335-3-16-.05*)